Objective
Real Time Casualty Assessment (RTCA) Instrumentation

PM ITTS STOC Industry Conference

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Presenter:

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PM-ITTS IMO

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STRICOM TEAM

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Tom Newton	Systems Engineer
Sue-Ellen Sahagun-Dorland	Contracts Specialist
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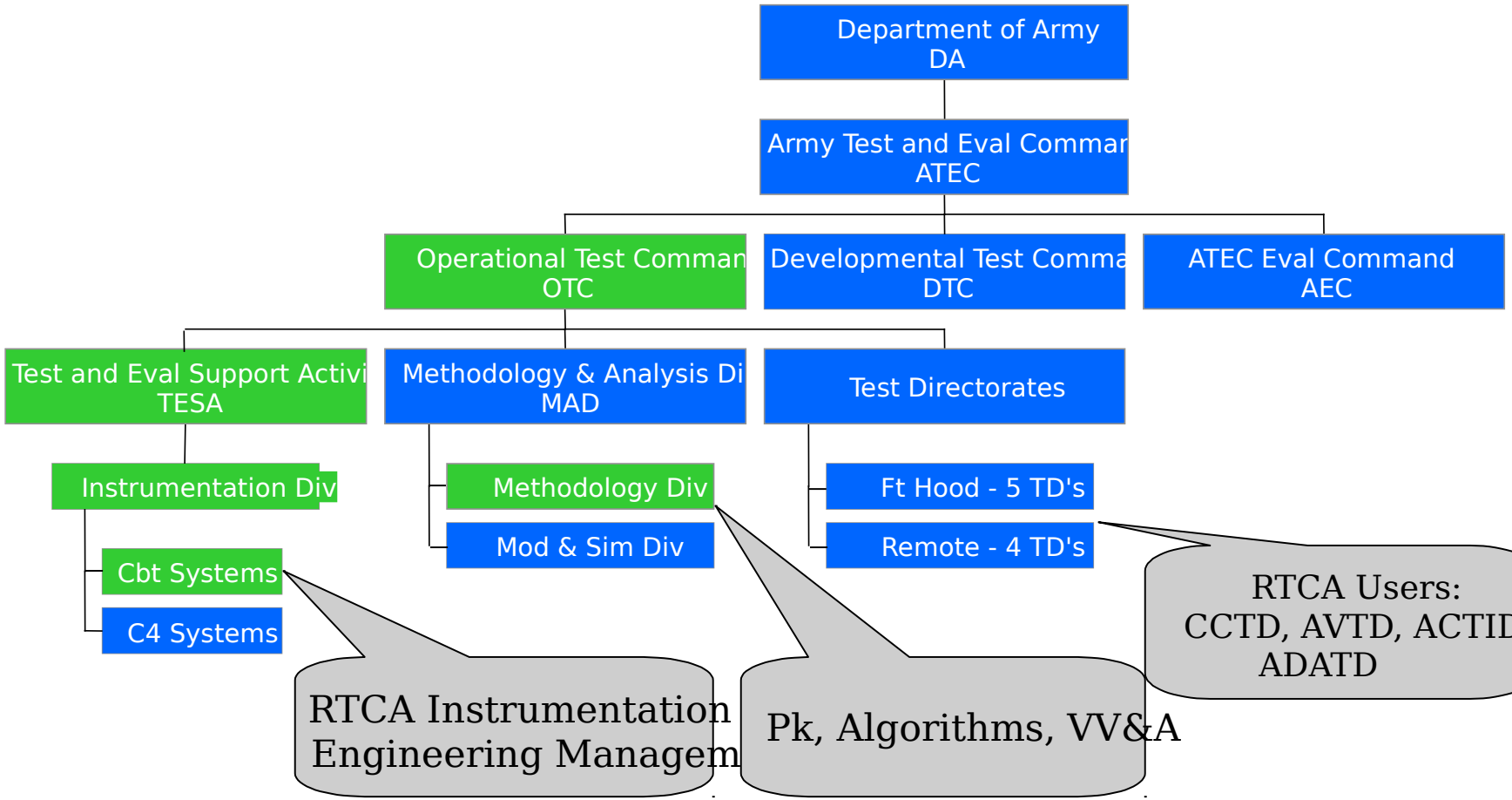
Primary Program Mission is to Support OTC's TESA Division



Basic Tenets for RTCA for Operational Testing

- Very high pairing rates for reasonably aimed shots
- Outcomes from statistically valid Pk tables (classified)
- Statistical outcomes dependent on
  - Range
  - Exposure
  - Aspect Angle
  - Motion (shooter and target)
  - Other factors

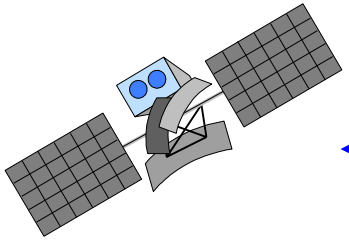
Operational Testers' RTCA Requirements

- Provide realistic simulation of weapon systems
  - ballistic trajectories/missile flyouts and dispersions
  - munitions lethality
  - cues to shooters and targets
- Provide time synchronized engagement data
  - trigger pulls
  - player positions
  - countermeasure usage
  - evasive maneuvers
  - engagement effects
- Provide time synchronized player state, tracking, and status data
  - player state parameters may be required for some simulation
  - player tracking and status allow test monitoring and enforcement of control measures

Operational Testers' RTCA Requirements (cont'd)

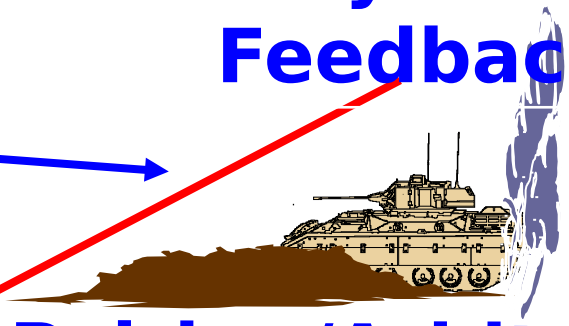
- Automated Area Weapons Effects
  - Artillery - integrate with automated fire control
  - Minefields
  - Chemical/Biological - movement, persistence, sensors
- Robust Data Collection
  - Each event Pk and random #
  - All parameters associated with event
  - Operate 96 hrs +
- Real time monitoring
  - Assure scenario played within test design constraints
  - Monitor status of instrumentation and data collection
- Replay capability for quick-look review and analysis

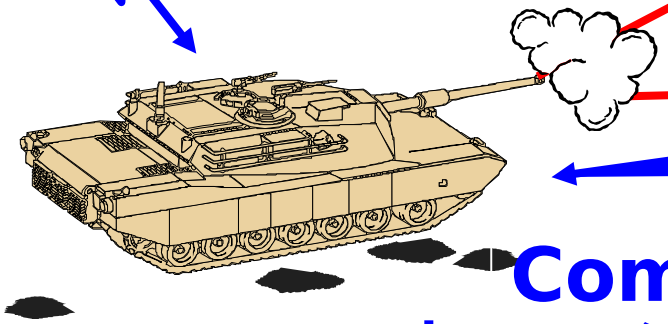
RTCA System Requirements



Player Feedback

Position Location

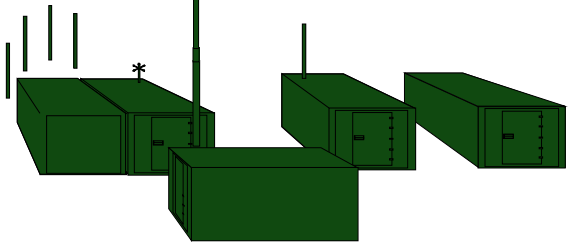




Pairing/Arbitration/ Assessment

Communications

C3 Center



CLASSIFIED

AREA EFFECTS WEAPONS

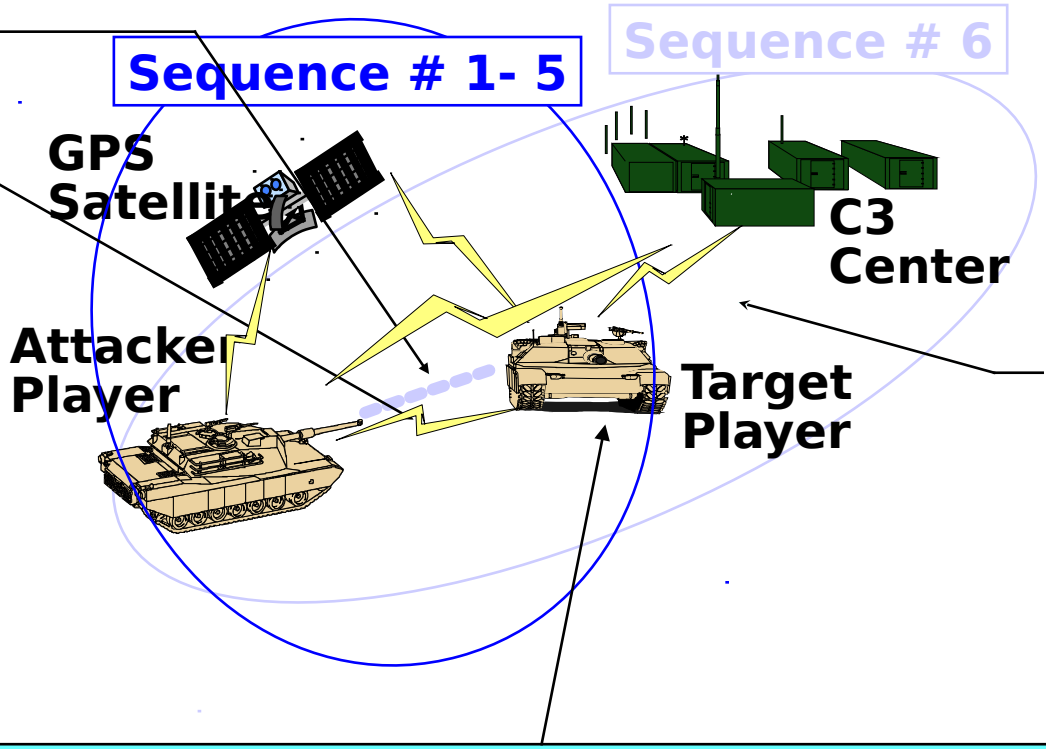
IMO

PM-ITTS

MAIS Engagement Sequence

1 - Line-of-sight laser initiates engagement

player units (PU's) exchange engagement info via RF sub-net (3-D Locations, number & type of Rounds Fired, Time)



6 - Attacker & Target PU "time-tags" event and reports engagement

3 - Target assesses lethality of engagement based on number & type of round, engagement range, firer & target motion, and aspect angle

4 - Target PU assesses damage level based on AMSAA provided PH/PK tables

5 - Target gives appropriate Audio / Visual cues

MAIS Kits

- 216 Vehicle Player Kits
- 300 Dismounted Soldier Kits
- 2 (+) C3 Centers
- 2 (+) Sets of Relays

(FY02-04)

216 Vehicles	⟷	300 LWDMT 95 Vehicles
179 (Less Spares)		

At Aug 01 Industry Day, we briefed:

Acquisition Strategy

Multiple awards in a Full & Open Competition environment except when specific Small Business Set- asides can be identified

FY 02-03 Specific Areas of Interest

- **Modify legacy system**
- **Pairing Improvements**
  - **Non-Line-of-Sight for large vehicular platforms (Comanche, ADA)**
  - **Non-Line-of-Sight for small arms (Mk-19, M203)**
  - **Visual feedback for tracers/impact for small arms**
- **TESS-Objective RTCA Interface**
  - **Comanche TESS**
- **MAIS-Land Warrior Interface**
- **MAIS-MOUT Interface**
- **Objective RTCA**

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  - **Comanche TESS**
- **MAIS-Land Warrior Int**
- **MAIS-MOUT Interface**
- **Objective RTCA**

MK-19 AWARD

Upcoming Comanche RFP

FITE AWARD

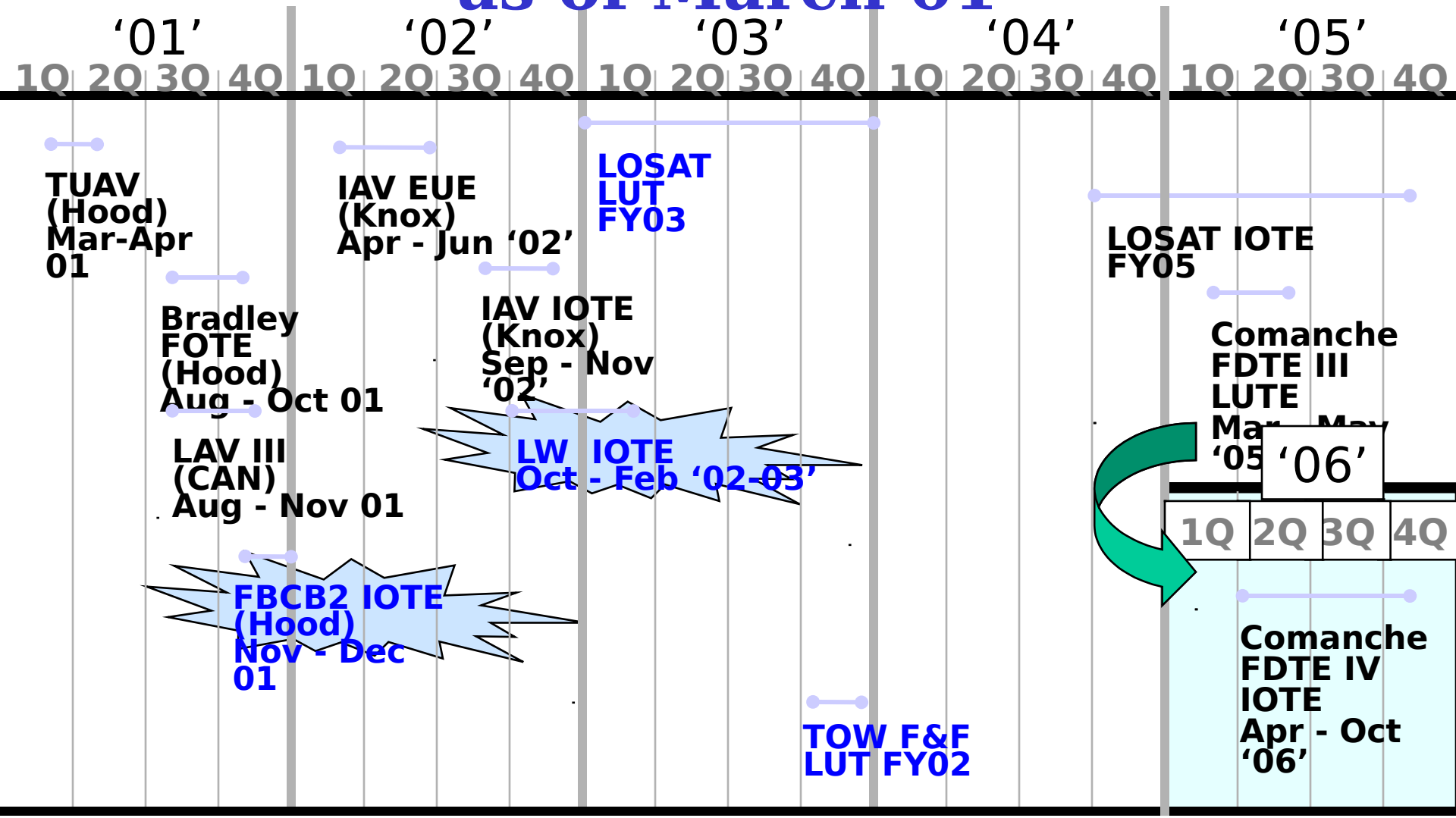
OTC AWARD

Obj MAIS Phase II AWARD

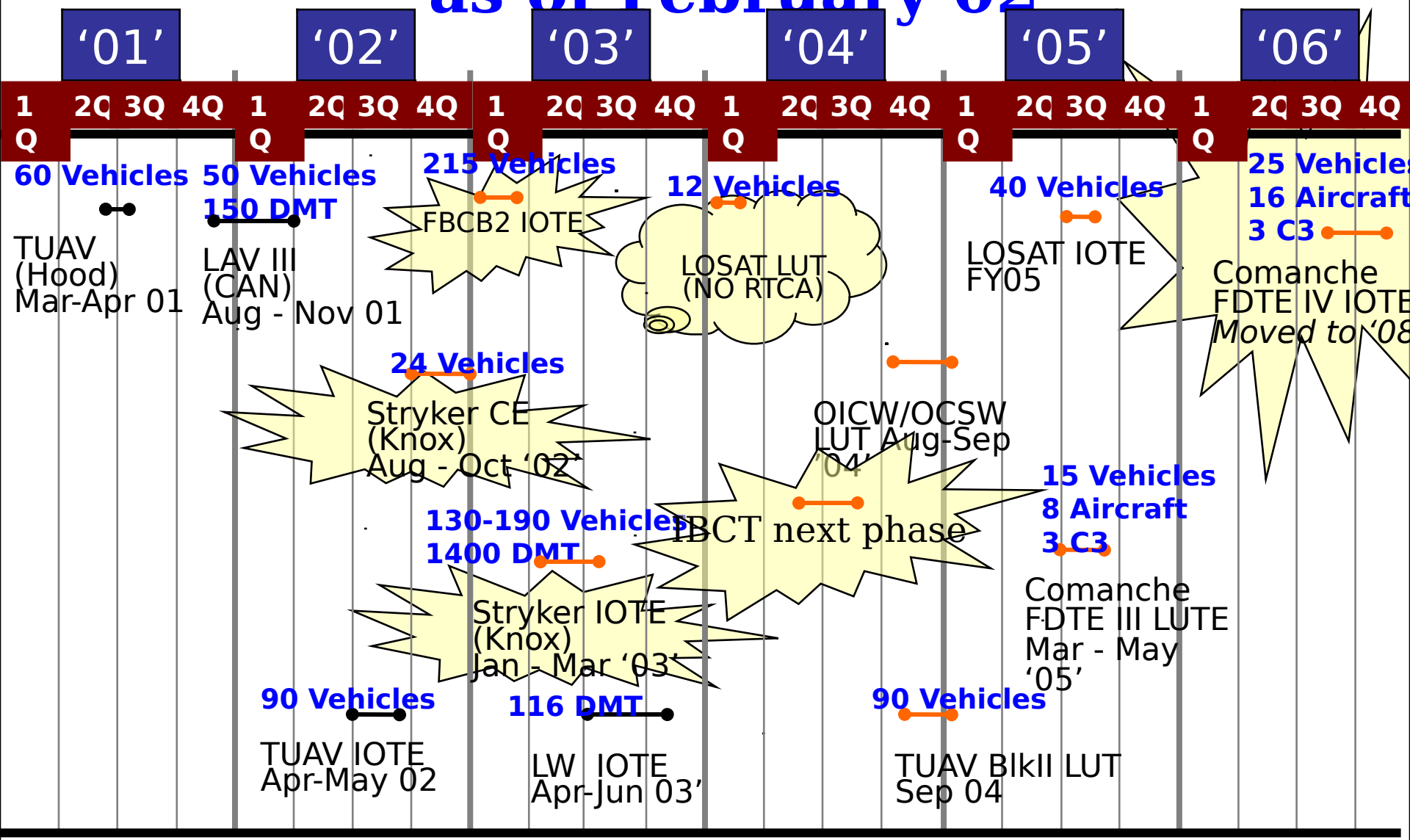
Customer Priority

1. Supporting near-term tests (within 2 years)
2. Supporting out-year tests (new required capabilities)
3. Program infrastructure improvements (Advance the state-of-the-art)

Projected Test Support Schedule as of March 01


'01'
'02'
'03'
'04'
'05'
1Q 2Q 3Q 4Q 1Q 2Q 3Q 4Q 1Q 2Q 3Q 4Q 1Q 2Q 3Q 4Q 1Q 2Q 3Q 4Q
TUAV (Hood) Mar-Apr 01
IAV EUE (Knox) Apr - Jun '02'
LOSAT LUT FY03
LOSAT IOTE FY05
IAV IOTE (Knox) Sep - Nov '02'
Bradley FOTE (Hood) Aug - Oct 01
Comanche FDTE III LUTE Mar - May '05
LW IOTE Oct - Feb '02-03'
LAV III (CAN) Aug - Nov 01
'06'
1Q 2Q 3Q 4Q
FBCB2 IOTE (Hood) Nov - Dec 01
Comanche FDTE IV IOTE Apr - Oct '06'
TOW F&F LUT FY02

Projected Test Support Schedule as of February 02



Current MAIS infrastructure shortcomings to address:

- Program requires yearly frequency waiver to continue to operate with the currently assigned frequencies
- Program requires encryption upgrade
- Unable to adequately instrument Rotary Wing Aircraft, Fixed Wing Aircraft, Air Defense Artillery, and all indirect fire systems
- Too intrusive (size, weight, power consumption)
- High support costs
- Unable to provide 96 hours of continuous operation due to battery shortcomings & boresight retention issues

Objective End-State

- 300 Vehicle Player Kits
- 24 Rotary Wing Aircraft Kits
- 4 Fixed Wing Aircraft Kits (?)
- 20 Air Defense Kits
- 600 Dismounted Soldier Kits
- 2 (+) C3 Centers/Sets of Relays

(FY05 and beyond)

Future Plans

Near Term (Within 1 Year)

- Complete C3 Upgrade
- Field & Upgrade Weapons Performance System (WPS) player units
- Field new MILT lasers

Mid Range (Over Next 5 Years)

- Modular Instrumentation Standards (CVII)
- Geometric Pairing - Incremental Application
- Robust Aviation and Air Defense Capabilities
- New Player Units (new Radios, new encryption, FPGA technology)
- Interoperability with other simulation systems & tactical C4I

Longer Range (10 Years)

- Visualization Features - tracers, fly-outs, burst effects, virtual

Remaining FY02 Efforts

Comanche OT preparation

- Request for White paper
- Final acquisition strategy determined after

  analysis of submitted white papers

Technology Areas of Interest

- Digital communications
- Wireless technologies
- Ultra Wide Band technologies
- Imaging simulation
- Terrain databases
- Position-Location technologies
- Battlefield pairing (to include geo pairing)
- Simulation Interoperability technologies
- Encryption technologies
- Synthetic Signatures

Specific Areas of Interest (FY03-04)

- **Multiple awards in a Full & Open Competition environment except when**

  specific Small Business Set- asides can be identified

- **Goals: Development Contracts on:**
  - **New Player Kits:**
    - **DMT with new communications and encryption**
    - **CVII-based vehicle kit with new communications and encryption**
    - **Geometric pairing implementation (Mar 03 STOC Award)**
    - **C3 retrofit for new communications and encryption**
    - **Rotary Wing/Threat Air Defense Player Kits (Apr 03 STOC award, if not part of FY02 award)**
  - **New/Expanded Interfaces to other Systems: STORM, AFATDS (Feb 04 STOC Award)**

Objective RTCA Instrumentation

Master Program Schedule/Funding

Fiscal Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Requirement Approval	▼								
Player Unit Upgrades		△				▽			
Surrogate/Threat Weapon Instrum.		△				▽			
Communications Arch Upgr.		△				▽			
Rotary Wing/ADA Flyout		△				▽			

Each effort shown above will include two or more development/production phases.

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Funding			$$$	$$$$	$$$$	$$$$	$$$$	$$$$	$$$$

SUMMARY

- **NEAR-TERM AREAS OF INTEREST**
  - **Player Unit Upgrades (bat/power, miniaturization, vest enhancements)**
  - **Rotary Wing/Air Defense Kits**
  - **Communications Architecture Upgrade**
  - **Interoperability**
  - **Mobile MOUT Capability**
- **STRATEGY**
  - **Continue Migration from Current to Objective RTCA**
  - **Multiple awards under STOC**
  - **Advance the State-of-the-Art for RTCA while Supporting all OT Requirements**
  - **Evolve to a Common, Embedded, Test and**